Reconsideration of the present application is respectfully requested.

Claims 1, 3, 4, 7, 11, 14, 17, 20, 23, 26 and 28 have been amended. Claims 5, 15 and 21 were previously canceled. No claims have been canceled or added in this amendment.

Claims 1-4, 6-14, 16-20 and 22-28 remain pending.

Claims 1, 7, 17, 23 and 26 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1, 7, 17, 23 and 26 further stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 1-28 stand rejected under 35 U.S.C. § 103(a) based on U.S. Patent no. 6,539,352 of Sharma et al. ("Sharma") in view of U.S. Patent no. 6,836,758 of Bi et al. ("Bi").

Applicants respectfully traverse the rejections. All of the above amendments are made to broaden the claims and/or to place the claims in better form, not in response to the rejections or to comply with any statutory requirement of patentability. No amendments are believed to be necessitated by the present Office Action, as explained below.

Section 112(2) Rejection

Claims 1, 7, 17, 23 and 26 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner states:

> The claims recitation is vague and indefinite about **how using the combined speaker verification and speech**

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recognition score is going to help determine a different best speech recognition hypothesis among alternative candidates. For, it is **unclear how the best speech recognition hypothesis, chosen based on the speech recognition scores alone, will be changed by what the speaker verification score is**. Only score values rather than the relative ranking of speech recognition hypotheses (i.e., their hierarchy) can be affected by combining the speech recognition hypothesis and speech verification scores. (Office Action, pp. 2-3)(emphasis added).

This rejection is in error. 35 U.S.C. § 112, second paragraph, states, "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter <u>which the applicant regards as his invention</u>" (emphasis added). The purpose of a claim, therefore, is <u>not to teach</u> how the invention works, but rather, to set forth <u>the boundaries</u> of what the applicant considers to be the invention. "The primary purpose of this requirement of definiteness of claim language is to ensure that <u>the scope</u> of the claims is clear so the public is informed of the boundaries of what constitutes infringement of the patent. A secondary purpose is to provide a clear measure of <u>what applicants regard as the invention</u>." MPEP 2173 (emphasis added). Furthermore, "[b]readth of a claim is not to be equated with indefiniteness." MPEP 2173.04, citing <u>In re Miller</u>, 441 F.2d 689, 169 U.S.P.Q. 597 (CCPA 1971).

In the present Application, the <u>scope</u> of the claims is entirely clear from the claim language. There is no ambiguity or indefiniteness about <u>what Applicant regards as</u> the invention. Whether the claims are clear about "<u>how</u> using the combined speaker verification and speech recognition score is going to help determine a different best speech recognition hypothesis" is <u>irrelevant</u> under 35

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U.S.C. § 112, second paragraph (emphasis added). Therefore, this rejection is improper and should be withdrawn.

Section 112(1) Rejection

Claims 1, 7, 17, 23 and 26 further stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner contends, "There is no written description indicating how the speaker verification score could change the best speech recognition hypothesis hierarchy, and thus alter the best speech recognition hypothesis choice from that based on the speech recognition scores alone, for the alternative speech recognition hypotheses." (Office Action, p. 3)

This rejection is also in error. The functionality recited in Applicant's claims is clearly described in Applicant's specification in, for example, paragraphs [0030] and [0031]. The rejection is therefore improper and should be withdrawn.

Prior Art Rejection

The present invention relates to an integrated speaker and speech recognition system that provides improved speaker-specific response in a noisy environment. The invention uses the results of speaker _verification_ in a novel and non-obvious way, i.e., to improve the _quality_ of speech _recognition_.

For example, claim 23 recites:

23. (Currently amended) A method comprising:

receiving an utterance from a speaker at a speech recognition system;

computing a speaker verification score based on a voice characteristic model associated and with the utterance;

computing a speech recognition score associated with the utterance; and

selecting a best hypothesis from a plurality of hypotheses representing automatic speech recognition results of the utterance, based on both the speaker verification score and the speech recognition score.

(Emphasis added.)

First, one must note the difference between speech recognition and speaker verification. Speech <u>recognition</u> involves recognizing <u>what</u> the speaker is saying. Speaker <u>verification</u>, on the other hand, involves determining whether the speaker is <u>who</u> he claims to be. Speaker verification is sometimes called "speaker recognition" (e.g., as in Sharma), however, neither term means the same thing as "speech recognition". This distinction is well-understood by those skilled in the relevant art.

Response to Examiner's *"Response to Arguments"*

In the present Office Action, the Examiner responds to Applicant's arguments regarding the previous rejection by stating, "As per claim 23, Applicant admits that Sharma discloses 'certain scores' (Remarks, page 10), but he is not sure if they are speaker verification scores or speech recognition scores." (Office Action, p. 2).

It appears that the Examiner did not read Applicant's last response carefully. Applicant clearly stated that Sharma does not disclose computing any

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speech <u>recognition</u> scores (this point was discussed on pages 4-5 of Applicant's last response and is also discussed again below). Furthermore, the Examiner's citation to "Remarks, page 10" is not understood, since Applicant's last response was only seven (7) pages long.

The Examiner also states:

> Applicant asserts that the scores cannot be both speech recognition and speaker verification scores. Examiner respectfully disagrees and notes that Sharma teaches speech recognition (col. 4, lines 32-35, wherein the user speaks a password into the system for verification), and teach [sic] also, speaker or voice verification (col. 3, lines 41-51, wherein the system uses extracted features of the user's voice for speaker verification). (Office Action, p. 2).

Applicant's response is that the mere fact that a system may use both speech recognition and speaker verification, as the Examiner contends, does not equate to, suggest or imply that <u>a given score or set of scores</u> can be <u>both</u> speech recognition and speaker verification scores. So even if the Examiner's above-quoted statement is assumed to be entirely correct (i.e., that Sharma teaches both speech recognition and speaker or voice verification), that fails to rebut Applicant's point, which is that the <u>scores</u> mentioned in Sharma cannot be <u>both</u> speech recognition and speaker verification scores. Applicant therefore maintains his argument regarding Sharma, in all respects.

<u>Response to New Grounds of Rejection</u>

Claims 1-28 stand newly rejected under 35 U.S.C. § 103(a) based on Sharma in view of Bi. Sharma is primarily directed to speaker verification. Bi is primarily directed to speech recognition. However, neither Sharma nor Bi

discloses or suggests using results of speaker <u>verification</u> to improve the accuracy of speech <u>recognition</u>, as the present invention does, nor does their combination suggest this. More specifically with regard to claim 23, neither Sharma nor Bi discloses or even suggests selecting a best hypothesis from a plurality of hypotheses representing automatic speech <u>recognition</u> results of the utterance, <u>based on both a speaker verification score and a speech recognition score</u>.

The Examiner admits that Sharma fails to disclose selecting a best hypothesis from a plurality of hypotheses representing automatic speech recognition results of the second utterance, based on a combined based on both a speaker verification score and a speech recognition score (Office Action, p. 5). However, the Examiner contends that Bi teaches such functionality, and that it would be obvious to combine those teachings with those of Sharma to produce the present invention.

Applicant agrees with the Examiner's admission regarding what Sharma fails to disclose; however, Applicant respectfully submits that the Examiner has misread both Sharma and Bi. Although Applicants arguments are directed to the alleged <u>combination</u> of references, it is necessary to consider their individual disclosures, in order to ascertain what combination, if any, could be made from them.

First, the Examiner incorrectly contends that Sharma discloses "computing a speech recognition score . . ." at col. 4, lines 28 and col. 5, lines 10-11 (Office

Action, p. 5). There is no disclosure of computing any speech <u>recognition</u> scores there or anywhere else in Sharma. Sharma does disclose computing certain scores, as follows:

> The multiple classifiers of the enrollment component are used to 'score' the subword data, and the scores are fused, or combined. The result of the fusion is a "final score". The final score is compared to the stored threshold. If the final score exceeds the threshold, the test sample is verified as the user's. If the final score is less than the threshold, the test sample is declared not to be the user's. Sharma, col. 5, lines10-17.

> • • •

> In the preferred embodiment, a classifier fusion module 130 using the linear opinion pool method combines the NTN score and the GMM score. Col. 11, lines 43-45.

> • • •

> The threshold value output 140 is compared to a 'final score' in the testing component to determine whether a test user's voice has so closely matched the model that it can be said that the two voices are from the same person. Col. 12, lines 8-12.

From the above-quoted language, it is clear that the scores mentioned in Sharma merely indicate <u>how closely segments of speech match a model</u> of previously stored speech. Thus, these scores are, if anything, speaker <u>verification</u> scores, <u>not</u> speech <u>recognition</u> scores. If the Examiner nonetheless maintains that these scores are speech recognition scores, then they cannot also be the speaker verification scores recited Applicant's claims.

Second, the Examiner contends that Bi makes up for what Sharma fails to disclose, by disclosing "selecting a best hypothesis from a plurality of hypotheses representing automatic speech recognition results of the second utterance (col. 6, lines 10-24) based on both a speaker verification score and speech recognition score (col. 3, lines 54-59, and col. 2, lines 30-31)." Office Action, p. 5. The Examiner is mistaken. It appears that the Examiner has confused speech recognition with speaker recognition (or "speaker verification").

Bi discloses using multiple voice recognition engines and combining their results. More specifically, Bi discloses using both a speaker-dependent voice recognition (VR) engine and a speaker-dependent voice recognition (VR) engine to improve the accuracy of recognition (col. 2, lines 27-32; col. 3, lines 54-67). By "voice recognition (VR)", Bi means speech recognition, not speaker verification (or "speaker recognition"): Bi states, "Devices that employ techniques to recover a linguistic message from an acoustic speech signal are called "voice recognizers." Bi, col. 2, lines 56-58 (emphasis added); see also, generally, col. 1, line 11 and 17-21, 29-40. Speech recognition, or "voice recognition (VR)" as it is called in Bi, is not to be confused with speaker verification (or "speaker recognition").

Bi does not disclose or suggest that a speech recognition result (e.g., the selected hypothesis) can be based on a speaker verification score, as in the present invention. Thus, in contrast with claim 23, Bi does not disclose or suggest selecting a best hypothesis from a plurality of hypotheses representing automatic speech recognition results of the utterance, based on both the speaker

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verification score and the speech recognition score. Neither does Sharma

disclose or suggest this functionality, as already admitted by the Examiner.

Therefore, no combination of Sharma and/or Bi could produce all of the

limitations of Applicant's invention, as claimed. Hence, claim 23 cannot be

considered obvious based don Sharma and/or Bi, nor can any of its dependent

claims.

Each of the other independent claims in the present application includes

limitations similar to those discussed above regarding claim 23. Therefore, all of

Applicant's claims are patentable over the cited art, for at least these reasons.

Dependent Claims

In view of the above remarks, a specific discussion of the dependent

claims is considered to be unnecessary. Therefore, Applicants' silence regarding

any dependent claim is not to be interpreted as agreement with, or acquiescence

to, the rejection of such claim or as waiving any argument regarding that claim.
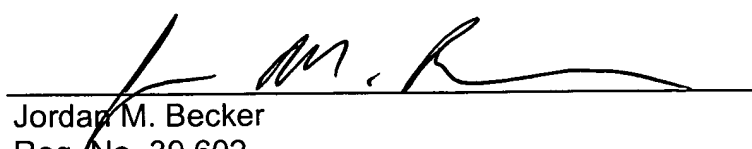
Conclusion

For the foregoing reasons, the present application is believed to be in condition for allowance, and such action is earnestly requested.

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

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